AMENDMENTS TO CLAIMS

1. (Currently amended) A multiple arbitration ~~circuit~~ system capable of ~~simultaneously~~ arbitrating multiple paths comprising:

   a) a plurality of ~~from n~~ source ports ~~to n~~ and destination ports ~~at the same instance in time~~;

   b) an arbitration circuit for arbitrating paths from the source ports to the destination ports to prevent multiple source paths from being simultaneously connected to the same destination port, the arbitration circuit maintaining a connection between a first source port and a first destination port until an express command is received to disconnect the connection, whereby the connection is maintained even in light of connection requests received at a later time from other source ports desiring to connect with the first destination port.

2-13 (Cancelled)

14. (Currently amended) A method for interconnecting multiple source ports to multiple destination ports ~~processors and/or peripherals~~ through a digital electronics switch employing a multiple arbitration circuit ~~having a crosspoint switched bus~~, said method comprising the steps of:

   a) ~~simultaneously~~ arbitrating multiple paths from ~~n~~ source ports ~~associated with said processors or said peripherals~~ to ~~n~~ destination ports ~~associated with said processors or peripherals at the same instance in time, wherein n represents the maximum number of ports on said crosspoint switched bus through said multiple arbitration circuit~~;

   b) connecting at least one of said ~~n~~ destination ports to at least one of said ~~n~~ source ports;

   c) maintaining the connection until an express command is received to disconnect the connection, whereby the connection is maintained even in light of connection requests received at a later time from other source ports desiring to connect with the destination port.

15. (New) The system of claim 1 further comprising:

c) for each pair of a source port S and a destination port D, a path connecting S to D, said path at a given time being either open, in which case data can flow from S to D, or closed, in which case data cannot flow from S to D;

d) a request decoder forming part of the arbitration circuit and being assigned to source port S, said request decoder, on behalf of source port S, creating requests to connect to or disconnect from destination port D, sending such requests, and monitoring the status of each request; and

e) a request prioritizer forming part of the arbitration circuit and being assigned to destination port D, said request prioritizer opening and closing paths in response to the requests, such that:

(i) if only one source port requests to connect to a given destination port, then the corresponding path to source port S will be open;

(ii) if multiple source ports request to connect to a single destination port D at the same time, then the requests will be prioritized, source S will be chosen, and a path from S to D will be open; and

(iii) once a given path is opened it will remain open until an express command to disconnect has been received from the request decoder.

16. (New) The multiple arbitration system of claim 15, wherein if a path is open to a given destination, the request prioritizer will suspend communication across the path upon receipt of an XOFF signal and allow communication across the path upon receipt of an XON signal; or if no path is open to a given destination, the request prioritizer will refuse requests for connection to the destination upon receipt of an XOFF signal and resume processing of requests for connection to the destination upon receipt of an XON signal.

17. (New) The multiple arbitration system of claim 16, wherein the request prioritizer for destination port D sends a signal to each source port whether the path from the source port to D is open or closed, and the source port determines whether it is connected to any destination by examining such signals from all the destination ports.

18. (New) The multiple arbitration system of claim 15, wherein an open connection will close after it has been open for a preset amount of time, or by request upon occurrence of some previously specified programmatic condition.

19. (New) The multiple arbitration system of claim 15, further comprising:

f) a fibre channel switch containing the source ports, the destination ports, the request decoders, and the request prioritizers.

20. (New) The method of claim 14, wherein:

the step of arbitrating multiple paths further comprises

i) establishing in advance a prioritization scheme for prioritizing competing requests from source ports for connection to each destination port;

ii) upon sending a request R to connect a source port S to a destination port D, using the prioritization scheme to prioritize R against any requests from other source ports to connect to D;

the step of connecting further comprises opening a connection from source S to destination D when D is not already connected to a source port and request R is determined to have the highest priority of all current requests from source ports to connect to D; and

further comprising

d) providing a first indication to source S when the connection to a destination D is open and a second indication to each source S whose connection to D is closed; and

e) monitoring at source S, on an ongoing basis, signals from destination ports to determine whether at a particular time S has an open connection to any destination port.

21. (New) The process of claim 20, further comprising:

f) if an XOFF signal is received for a given destination and a connection to that destination is open, suspending communication across that connection;

g) if an XON signal is received for a given destination and a connection to that destination is open, allowing communication across that connection;

h) if an XOFF signal is received for a given destination and no connection to that destination is open, refusing any requests for connection to that destination; and

i) if an XON signal is received for a given destination and no connection to that destination is open, resuming processing of requests for connections to that destination.

22. (New) The process of claim 21, further comprising:

j) closing an open connection after it has been open for a preset amount of time, or upon the occurrence of a previously specified programmatic condition.